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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,319	08/23/2006	Shoichi Kaneda	740675-70	8141
78198	7590	09/22/2008	EXAMINER	
Studebaker & Brackett PC 1890 Preston White Drive Suite 105 Reston, VA 20191			ENSEY, BRIAN	
			ART UNIT	PAPER NUMBER
			2615	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,319	Applicant(s) KANEDA ET AL.	
	Examiner Brian Ensey	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 7 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/26/06 & 9/7/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

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The disclosure is objected to because of the following informalities: Paragraph 0003 references footnote which provide patent numbers for patent references. The use of footnotes is not appropriate due to printing requirements and the patent references should be listed in the body of the specification and their specific significance should be discussed. Paragraphs 0008 – 0015 and 0017-0022 specify specific claims by number which is not proper since the content of a claim may change during prosecution or may be canceled. Reference to an embodiment and not a specific claim number is preferred. Paragraph 0052 is merely a reference character list and is not required in the specification. There is a grammatical error on page 4, line 1 “...enables to increase frequency band...”.

Appropriate correction is required.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: See page 8, line 10, “step part 24”. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 1 is objected to because of the following informalities: Claim 1, line 2 is an incomplete statement “a thin plate-like diaphragm to an inner surface of which a voice coil”. For the purpose of examination the Examiner interprets the claim as meaning the voice coil is attached to an inner surface of the diaphragm. Appropriate correction is required.

Claim 7 is objected to because of the following informalities: Claim 7 states “...according to one of Claims 1”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3, 4, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura U.S. Patent No. 7,369,674 B2.

Regarding claim 1, Miura discloses a multifunction-type vibration actuator (1) comprising: a thin plate-like diaphragm (22) to an inner surface of which a voice coil (24) is attached; a magnetic circuit part composed of a yoke (3), a magnet (10), and a pole piece (21); and a leaf spring-like suspension (15) for holding said magnetic circuit part is installed, said magnet circuit part is assembled inside a wall of a housing (2) with said suspension, said voice

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coil (24) is inserted into a magnetic gap of said magnetic circuit part such that said diaphragm fits tightly inside said wall of said housing, and said voice coil is electrically connected to an external terminal (26a, 26b) with lead wires pulled out to an outside of said wall, wherein said housing is integrally formed with a first house part with an elliptic wall and a second house part with a cylindrical wall of which a diameter corresponds to a width of said first house part at a center of an ellipse at both bottom walls of said first house part, said elliptic diaphragm to which an inner surface of said annular voice coil is installed, said circular magnetic circuit part provided with a magnetic gap into which said voice coil is inserted, and said suspension is disk-shaped, said elliptic diaphragm fits tightly inside a wall of said first house part, and said circular magnetic circuit part is assembled in a cylinder of said second house part with said suspension (See Figs. 1 and 2 and col. 2, line 58 to col. 4, line 40).

Regarding claim 3, Miura further discloses said elliptic diaphragm includes lead wires of said voice coil pulled out toward both sides (See col. 4, lines 25-35) while divided into positive and negative poles on a same semicircular plate surface (inherent since two separate connections are required for inputting the acoustic signal to the voice coil) from a dome-shaped part at a center of said plate surface.

Regarding claim 4, Miura further discloses said suspension comprises a central ring part (15) for holding a circular magnetic circuit part and three arm parts (15a) circumferentially extending in a same direction with a same length from the proximal ends of arms located apart from each other at an angle of 120.degree. on a ring part, a distal end of one of said arm parts extending outward from a second house part is fitted and fixed in a dent located in middle of one of bottom wall surfaces and said distal ends of remaining two arm parts extending outward from

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said second house part are fitted and fixed in dents located at both sides of another bottom wall surface of said first house part (See Fig. 1 and col. 3, lines 49-59).

Regarding claim 6, Miura further discloses an external terminal (26) electrically connected to a voice coil (24) is formed with a printed circuit board and said printed circuit board is installed to a bottom wall surface opposite to a diaphragm fitted surface at one of bottom walls of said first house part (See Fig. 1, and col. 4, lines 32-35).

Regarding claim 7, Miura further discloses portable communication equipment mounted with a multifunction vibration actuator (See Fig. 4 and col. 4, lines 59 and 60).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miura as applied to claim 1 above, and further in view of Frasl WO 2005/107315.

Regarding claim 2, Miura discloses an actuator as claimed. Miura does not expressly disclose said elliptic diaphragm of which plate surface is provided with a plurality of V-grooves that radially extend at a same angle from a dome-shaped part surrounded by an annular voice coil at a center of a plate surface and that are long on semicircular plate surfaces located at both sides in a longitudinal direction and short on plate surfaces located at both sides in a lateral direction.

However, the use of V grooves on a diaphragm is well known in the art and Frasl teaches an elliptic diaphragm of which plate surface is provided with a plurality of V-grooves that radially extend at a same angle from a dome-shaped part surrounded by an annular voice coil at a center of a plate surface and that are long on semicircular plate surfaces located at both sides in a longitudinal direction and short on plate surfaces located at both sides in a lateral direction (See Fig. 1 and abstract). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to provide grooves as taught by Frasl in the diaphragm of Miura to

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reduce the stiffness of the diaphragm and equalize the forces acting on the voice coil of the actuator (See Frasl page 5, paragraph 4).

Allowable Subject Matter

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Ensey whose telephone number is 571-272-7496. The examiner can normally be reached on Monday - Friday 6:00 AM - 2:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Suhan Ni can be reached on 571-272-7505. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, Va. 22313-1450

Or faxed to:

(571) 273-8300, for formal communications intended for entry and for informal or draft communications, please label "PROPOSED" or "DRAFT".

Hand-delivered responses should be brought to:

Customer Service Window
Randolph Building
401 Dulany Street
Arlington, VA 22314

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian Ensey/
Primary Examiner, Art Unit 2615
September 18, 2008